Management of Labor

Commander Diane Miller, NC, USN
Staff, Certified Nurse-Midwife

Definition of Labor

- Progressive increase in contraction frequency and intensity resulting in cervical change
- Normal uterine contractions follow normal gradient pattern (essential to dilation of cervix)
- Uterus divided functionally into upper and lower zones

First Stage Labor

- Latent Phase
- from onset of labor to active progress
- contractions become established
- little descent

- Active Phase
- from active progress to complete dilatation
- contractions closer, longer, stronger
- progressive descent

Active Phase Labor - 1st Stage

- Acceleration phase - starts active labor
- Phase of maximum slope - time when dilatation occurs most rapidly (4 to 8 cm)
- Deceleration phase - end of active phase; dilation slows but descent at maximum rate
- Deceleration phase often called “transition”

Progress of Labor (Friedman)

- Minimum rates of dilatation
  - 1.2 cm per hour for nullipara
  - 1.5cm per hour for multipara
- Minimum rates of descent
  - 1 cm per hour for nullipara (avg 1.6)
  - 2.1 cm per hour for multipara (avg 5.4)

Progress of Labor (Friedman)

- Average length of second stage
  - 1 hr for nullipara
  - 15 min for multipara
  - Abnormal if second stage lasts longer than 2 hours for nullipara and 1 hour for multipara

Progress During Labor

- Kilpatrick, S.J. and Laros, R.K. Jr. Characteristics of normal labor. Obstet. Gynecol. 74(1):86 (July) 1989.
- A study of 7000 women determined a statistically significant difference in length of 1st and 2nd stages dependent on whether conduction anesthesia was used.

Progress of Labor - Nullipara

- 1st Stage Labor
- 8.1 +/- 4.3 hr. without conduction anesthesia
- 10.2 +/- 4.4 hr. with conduction anesthesia
- 2nd Stage Labor
- 54 +/- 39 min without conduction anesthesia
- 79 +/- 53 min with conduction anesthesia

Progress of Labor - Multipara

- 1st Stage Labor
- 5.7 +/- 3.4 hr. without conduction anesthesia
- 7.4 +/- 3.8 hr. with conduction anesthesia
- 2nd Stage Labor
- 19 +/- 21 min without conduction anesthesia
- 45 +/- 43 min with conduction anesthesia

Top 10 Signs of Transition

- Perspiration on upper lip or brow
- Shaking legs/chattering teeth
- Nausea/vomiting
- Natural amnesia between contractions
- Severe contractions q 1-1/2 to 2', lasting 60 to 90 seconds (toes curling)
- Irritability, rejection of companions

Top 10 Signs of Transition

- Marked decrease in modesty
- Increased amount of bloody show
- Rectal pressure, urge to push - and finally
- “The baby is coming!”

Maternal/Fetal Assessment

- History
- Physical Exam (including pelvic exam)
- Fetal Assessment
- Laboratory Tests
- Knowledge of Maternal physiologic changes
- Ongoing screening for complications

Mechanisms of Labor

- Defined as positional movements the fetus undergoes to accommodate itself to the maternal pelvis
- Larger diameters of the fetus become aligned with larger diameters of the maternal pelvis
- May overlap or occur simultaneously

Mechanisms of Labor

- Engagement - when BPD of fetal head has passed through the pelvic inlet
- Descent - occurs throughout labor
- Flexion - essential to further descent; smaller head diameter substituted for larger diameters present with extension or military attitude (may occur before engagement)

Mechanisms of Labor

- Internal rotation - brings AP diameter of fetal head into AP diameter of maternal pelvis
  - essential for vaginal birth except with small fetuses
  - shoulders rotate with head but not past OA position; actually enter pelvic in oblique

Mechanisms of Labor

- Extension - responsible for birth of head in OA position
  - nuchal area acts as a pivotal point
- Restitution - rotation of head 45 degrees to right or left
  - untwists neck and brings head to right angles with shoulders

Mechanisms of Labor

- External rotation - shoulders rotate 45 degrees to be in AP diameter of pelvis with head in OT position
- Birth of shoulders and body by lateral flexion via the curve of Carus
- Curve of Carus - lower exiting end of pelvis

Second Stage Decisions

- Maternal pushing efforts
- Position for delivery
- Perineal support??
- Episiotomy
- Analgesia/anesthesia
- Obstetrician involvement

Maternal Pushing Efforts

- Routine or “forced”
- Closed glottis
- Structured method
- Begins when complete
- Concern about prolonged 2nd stage

- Physiologic
- Open glottis
- Spontaneous
- Begins with urge
- No arbitrary limits to 2nd stage

Benefits of Physiologic Pushing

- Breathing used is series of short pushes without sustained breath holding
- Results in reduced hypoxia and acidosis (increased cord pH values)
- Slow perineal distension may reduce laceration/episiotomy
- May lessen cystocele/uterine prolapse

Perineal Support

- "Hands on"
- Prenatal preparation
- Ironing out perineum
- Compresses
- Massage
- Perineal support
- Fetal head control

- "Hands off"
- Interfere with natural timing and stretching
- Touch stimulates muscular contractions
- Increased perineal trauma/edema
- Irritating to mother

Episiotomy

- Woman's preference
- Practitioner's beliefs
- Need for space for emergency interventions
- Size of fetus
- Self-control of woman

Episiotomy

- Midline
- If perineum short may extend into rectum
- Less painful healing
- Easier to repair
- Often better functional results

- Mediolateral
- May avoid rectal extension
- Points of stretch pull on incisional repair line
- Increased risk of entering rectum

Ritgen Maneuver

- Technique where clinician controls fetal head delivery
- Uncomfortable due to anal distension
- Associated with periurethral lacerations
- Effectively shortens second stage, especially when combined with episiotomy

Cord Clamping

- Little difference in term infants with early vs late clamping
- When combined with holding baby below introitus can result in 80cc transfusion to neonate
- Placental transfusion not desirable in case of known blood incompatibility

Third Stage Management

- Newborn Resuscitation
- Placental Delivery
  - Active vs Physiologic management
  - Schultze vs Duncan
- Observation for complications
  - 3rd stage mismanagement is largest single cause of hemorrhage

Fourth Stage Labor Management

- Evaluation of uterus
  - atony is major cause of PPH
- Inspection of cervix, vagina, perineum, and rectum
- Inspection of placenta, membranes, and umbilical cord
- Repair of episiotomy or lacerations

Postpartum Hemorrhage

- Frequently caused by uterine atony
  - overdistension, induction/augmentation, precipitous labor, prolonged labor, grand multiparity, hx of atony/PPH
- May result from retained placenta or membranes
- May result from cervical/vaginal lacerations

Placental Delivery

- Active vs expectant management
- Routine oxytocics reduce risk of PPH
- May increase risk of retained placenta
- Significant hypertensive effect
- Ergometrine lowers prolactin levels

Resources…

- Evidence based medicine
- Cochrane database of systematic reviews
- Search of 7000 studies in 60 key journals from 1950 on
- Enkin, M., Keirse, M., Renfrew,M. and Neilson, J. A Guide to Effective Care in Pregnancy and Childbirth, 2nd Edition. Oxford University Press, 1995

What is “Normal Labor”?